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UNITED STATES GOVERNMENT

MEMORANDUM

DATE: June 7, 1993

REPLY TO

ATTN OF: Robert Cleveland, SED, OET

Robert Cleveland

RECEIVED

JUN - 8 1993

SUBJECT: Letter to be placed in Docket ET 93-62

TO: Secretary, FCC

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

The attached letter from Frederick Maia dated April 16, 1993, concerning amateur radio facilities is relevant to the Commission's Notice of Proposed Rule Making in ET Docket 93-62 (FCC 93-142). Therefore, I have enclosed the original and four copies for incorporation into the docket in this proceeding. If

NATIONAL

T4D05 (A)

Why would you use a dummy antenna?

- A. For off-the-air transmitter testing
- B. To reduce output power
- C. To give comparative signal reports
- D. To allow antenna tuning without causing interference

T4D06 (A)

What minimum rating should a dummy antenna have for use with a 100-watt single-sideband phone transmitter?

- A. 100 watts continuous
- B. 141 watts continuous
- C. 175 watts continuous
- D. 200 watts continuous

T4D07 (D)

Why might a dummy antenna get warm when in use?

- A. Because it stores electric current
- B. Because it stores radio waves
- C. Because it absorbs static electricity
- D. Because it changes RF energy into heat

T4D08 (A)

What is used to measure relative signal strength in a receiver?

- A. An S meter
- B. An RST meter
- C. A signal deviation meter
- D. An SSB meter

T4D09 (B)

How can exposure to a large amount of RF energy affect body tissue?

- A. It causes radiation poisoning
- B. It heats the tissue
- C. It paralyzes the tissue
- D. It produces genetic changes in the tissue

T4D10 (A)

Which body organ is the most likely to be damaged from the heating effects of RF radiation?

- A. Eyes
- B. Hands
- C. Heart
- D. Liver

T4D11 (D)

What organization has published safety guidelines for the maximum limits of RF energy near the human body?

- A. The Institute of Electrical and Electronics Engineers (IEEE)
- B. The Federal Communications Commission (FCC)
- C. The Environmental Protection Agency (EPA)
- D. The American National Standards Institute (ANSI)

T4D12 (B)

What is the purpose of the ANSI RF protection guide?

- A. It lists all RF frequency allocations for interference protection
- B. It gives RF exposure limits for the human body
- C. It sets transmitter power limits for interference protection
- D. It sets antenna height limits for aircraft protection

T4D13 (D)

According to the ANSI RF protection guide, what frequencies cause us the greatest risk from RF energy?

- A. 3 to 30 MHz
- B. 300 to 3000 MHz
- C. Above 1500 MHz
- D. 30 to 300 MHz

T4D14 (D)

Why is the limit of exposure to RF the lowest in the frequency range of 30 MHz to 300 MHz, according to the ANSI RF protection guide?

- A. There are more transmitters operating in this range
- B. There are fewer transmitters operating in this range
- C. Most transmissions in this range are for a longer time
- D. The human body absorbs RF energy the most in this range

T4D15 (B)

According to the ANSI RF protection guide, what is the maximum safe power output to the antenna of a hand held VHF or UHF radio?

- A. 125 milliwatts
- B. 7 watts
- C. 10 watts
- D. 25 watts

T4D16 (C)

After you have opened a VHF power amplifier to make internal tuning adjustments, what should you do before you turn the amplifier on?

- A. Remove all amplifier shielding to ensure maximum cooling
- B. Make sure that the power interlock switch is bypassed so you can test the amplifier
- C. Be certain all amplifier shielding is fastened in place
- D. Be certain no antenna is attached so that you will not cause any interference

SUBELEMENT T5 - ELECTRICAL PRINCIPLES [2 exam questions - 2 groups]

T5A Definition of resistance, inductance, and capacitance and unit of measurement, calculation of values in series and parallel

T5A01 (D)

What does resistance do in an electric circuit?

- A. It stores energy in a magnetic field
- B. It stores energy in an electric field
- C. It provides electrons by a chemical reaction
- D. It opposes the flow of electrons

T5A02 (D)

What is the ability to store energy in a magnetic field called?

- A. Admittance
- B. Capacitance
- C. Resistance
- D. Inductance

T5A03 (C)

What is the basic unit of inductance?

- A. The coulomb
- B. The farad
- C. The henry
- D. The ohm

T5A04 (C)

What is a henry?

- A. The basic unit of admittance
- B. The basic unit of capacitance
- C. The basic unit of inductance
- D. The basic unit of resistance

T5A05 (D)

What is the ability to store energy in an electric field called?

- A. Inductance
- B. Resistance
- C. Tolerance
- D. Capacitance

T5A06 (A)

What is the basic unit of capacitance?

- A. The farad
- B. The ohm
- C. The volt
- D. The henry

T5A07 (B)

What is a farad?

- A. The basic unit of resistance
- B. The basic unit of capacitance
- C. The basic unit of inductance
- D. The basic unit of admittance

T5A08 (B)

If two equal-value inductors are connected in series, what is their total inductance?

- A. Half the value of one inductor
- B. Twice the value of one inductor
- C. The same as the value of either inductor
- D. The value of one inductor times the value of the other

T5A09 (A)

If two equal-value inductors are connected in parallel, what is their total inductance?

- A. Half the value of one inductor
- B. Twice the value of one inductor
- C. The same as the value of either inductor
- D. The value of one inductor times the value of the other

T5A10 (C)

If two equal-value capacitors are connected in series, what is their total capacitance?

- A. Twice the value of one capacitor
- B. The same as the value of either capacitor
- C. Half the value of either capacitor
- D. The value of one capacitor times the value of the other

T5A11 (A)

If two equal-value capacitors are connected in parallel, what is their total capacitance?

- A. Twice the value of one capacitor
- B. Half the value of one capacitor
- C. The same as the value of either capacitor
- D. The value of one capacitor times the value of the other

T5B Ohm's Law

T5B01 (D)

Ohm's Law describes the mathematical relationship between what three electrical quantities?

- A. Resistance, voltage and power
- B. Current, resistance and power
- C. Current, voltage and power
- D. Resistance, current and voltage

T5B02 (C)

How is the current in a DC circuit calculated when the voltage and resistance are known?

- A. $I = R \times E$ [current equals resistance multiplied by voltage]
- B. $I = R / E$ [current equals resistance divided by voltage]
- C. $I = E / R$ [current equals voltage divided by resistance]
- D. $I = P / E$ [current equals power divided by voltage]

ELEMENT 3A (TECHNICIAN CLASS) SYLLABUS**T1 - COMMISSION'S RULES****[5 exam questions - 5 groups]**

- T1A Station control, frequency privileges authorized to the Technician class control operator, term of licenses, grace periods and modifications of licenses
- T1B Emission privileges for Technician class control operator, frequency selection and sharing, transmitter power
- T1C Digital communications, station identification, ID with CSCE
- T1D Correct language, Phonetics, Beacons and Radio Control of model craft and vehicles
- T1E Emergency communications; broadcasting; permissible one-way, satellite and third party communication; indecent and profane language

T2 - OPERATING PROCEDURES**[3 exam questions - 3 groups]**

- T2A Repeater operation, courteous operation
- T2B Simplex operations, Q signals, RST signal reporting, repeater frequency coordination
- T2C Distress calling and emergency drills and communications - operations and equipment, Radio Amateur Civil Emergency Service (RACES)

T3 - RADIO-WAVE PROPAGATION**[3 exam questions - 3 groups]**

- T3A Ionosphere, ionospheric regions, solar radiation
- T3B Ionospheric absorption, causes and variation, maximum usable frequency
- T3C Propagation, including ionospheric, tropospheric, line-of-sight scatter propagation, and Maximum Usable Frequency

T4 - AMATEUR RADIO PRACTICES**[4 Exam Questions - 4 groups]**

- T4A Electrical wiring, including switch location, dangerous voltages and currents
- T4B Meters, including volt, amp, multi, peak-reading, RF watt and placement, and ratings of fuses and switches
- T4C Marker generator, crystal calibrator, signal generators and impedance-match indicator
- T4D Dummy antennas, S-meter, exposure of the human body to RF

T5 - ELECTRICAL PRINCIPLES**[2 exam questions - 2 groups]**

- T5A Definition of resistance, inductance, and capacitance and unit of measurement, calculation of values in series and parallel
- T5B Ohm's Law

T6 - CIRCUIT COMPONENTS**[2 Exam Questions - 2 groups]**

- T6A Resistors, construction types, variable and fixed, color code, power ratings, schematic symbols
- T6B Schematic symbols - inductors and capacitors, construction of variable and fixed, factors affecting inductance and capacitance, capacitor construction

T7 - PRACTICAL CIRCUITS**[1 exam question - 1 group]**

- T7A Practical circuits

T8 - SIGNALS AND EMISSIONS**[2 exam questions - 2 groups]**

- T8A Definition of modulation and emission types
- T8B RF carrier, modulation, bandwidth and deviation

T9 - ANTENNAS AND FEED LINES**[3 exam questions - 3 groups]**

- T9A Parasitic beam and non-directional antennas
- T9B Polarization, impedance matching and SWR, feed lines, balanced vs unbalanced (including baluns)
- T9C Line losses by line type, length and frequency, RF safety



ELEMENT 2 (NOVICE CLASS) SYLLABUS

N1 - COMMISSION'S RULES

[10 exam questions - 10 answers]

N5 - ELECTRICAL PRINCIPLES

[14 exam questions - 4 answers]